

CLAIMS:

What is claimed is:

1. A method for autonomic computing using a relational grammar, the method comprising the steps of:
  - reading an autonomic relational grammar, the autonomic relational grammar comprising one or more lexical token statements, one or more category statements and a rule, the rule comprising one or more relationship statements and the rule further comprising one or more autonomic action statements;
  - sensing a change in an input value related to a first token identified by a first lexical token statement;
  - parsing the input value with the relational grammar to form an autonomic derivation tree, the autonomic derivation tree comprising the first token, a first category, a first relationship and an autonomic action;
  - using the derived autonomic derivation tree to identify the autonomic action to be performed; and
  - performing the autonomic action.
2. The method according to claim 1 wherein the change in the input value is any one of the result of an instantiation of an attribute at initialization time or a change in a value of the first token.

3. The method according to claim 1 wherein the rule further comprises a second category statement and wherein the derivation tree further comprises a second category.

4. The method according to claim 1 wherein the rule further comprises a second lexical token statement and wherein the derivation tree further comprises a second token.

5. The method according to claim 1 wherein the relationship statements further comprise any one of a system attribute or the relationship between any one of the first category or the first token and any one of a third category or a third token.

6. The method according to claim 1 wherein the relational grammar further comprises a plurality of rule statements for defining a second rule.

7. The method according to claim 1 wherein the autonomic action comprises any one of a self-healing action, a self-protecting action, a self-configuring action or a self-optimizing action.

8. The method according to claim 1 comprising the further steps of:

determining resource objects and constraints;  
solving the constraints to form a constraint  
solution for the resource objects; and  
using the constraint solution to identify the  
autonomic action to be performed.

9. A method for creating autonomic computational linguistic grammar, the method comprising the steps of:

creating a first lexical token statement, the statement identifying a first token representing a state or process in an autonomic environment;

creating a first category statement, the statement identifying a first category representing a derived state or process in an autonomic environment;

creating a plurality of autonomic rule statements defining an autonomic rule for deriving a first category, the statements comprising a relationship statement and an action statement; and

saving the first lexical token statement and the autonomic rule statements as a relational grammar.

10. A system for autonomic computing using a relational grammar, the system comprising:

a network;

a computer system in communication with the network, wherein the computer system includes instructions to execute a method comprising:

reading an autonomic relational grammar, the autonomic relational grammar comprising one or more lexical token statements, one or more category statements and a rule, the rule comprising one or more relationship statements and the rule further comprising one or more autonomic action statements;

sensing a change in an input value related to a first token identified by a first lexical token statement;

parsing the input value with the relational grammar to form an autonomic derivation tree, the autonomic derivation tree comprising the first token, a first category, a first relationship and an autonomic action;

using the derived autonomic derivation tree to identify the autonomic action to be performed; and

performing the autonomic action.

11. The system according to claim 10 wherein the change in the input value is any one of the result of an instantiation of an attribute at initialization time or a change in a value of the first token.

12. The system according to claim 10 wherein the rule further comprises a second category statement and wherein the derivation tree further comprises a second category.

13. The system according to claim 10 wherein the rule further comprises a second lexical token statement and wherein the derivation tree further comprises a second token.

14. The system according to claim 10 wherein the relationship statements further comprise any one of a system attribute or the relationship between any one of the first category or the first token and any one of a third category or a third token.

15. The system according to claim 10 wherein the relational grammar further comprises a plurality of rule statements for defining a second rule.

16. The system according to claim 10 wherein the autonomic action comprises any one of a self-healing action, a self-protecting action, a self-configuring action or a self-optimizing action.

17. The system according to claim 10 wherein the method further comprises:

determining resource objects and constraints;  
solving the constraints to form a constraint  
solution for the resource objects; and  
using the constraint solution to identify the  
autonomic action to be performed.

18. A system for creating autonomic computational linguistic grammar, the system comprising:

a network;

a computer system in communication with the network, wherein the computer system includes instructions to execute a method comprising:

creating a first lexical token statement, the statement identifying a first token representing a state or process in an autonomic environment;

creating a first category statement, the statement identifying a first category representing a derived state or process in an autonomic environment;

creating a plurality of autonomic rule statements defining an autonomic rule for deriving a first category, the statements comprising a relationship statement and an action statement; and

saving the first lexical token statement and the autonomic rule statements as a relational grammar.

19. A computer program product for autonomic computing using a relational grammar, the computer program product comprising:

a computer readable medium having computer readable program code therein for performing a method comprising:

reading an autonomic relational grammar, the autonomic relational grammar comprising one or more lexical token statements, one or more category statements and a rule, the rule comprising one or more relationship statements and the rule further comprising one or more autonomic action statements;

sensing a change in an input value related to a first token identified by a first lexical token statement;

parsing the input value with the relational grammar to form an autonomic derivation tree, the autonomic derivation tree comprising the first token, a first category, a first relationship and an autonomic action;

using the derived autonomic derivation tree to identify the autonomic action to be performed; and

performing the autonomic action.

20. The computer program product according to claim 19 wherein the change in the input value is any one of the result of an instantiation of an attribute at initialization time or a change in a value of the first token.

21. The computer program product according to claim 19 wherein the rule further comprises a second category statement and wherein the derivation tree further comprises a second category.

22. The computer program product according to claim 19 wherein the rule further comprises a second lexical token statement and wherein the derivation tree further comprises a second token.

23. The computer program product according to claim 19 wherein the relationship statements further comprises any one of a system attribute or the relationship between any one of the first category or the first token and any one of a third category or third token.

24. The computer program product according to claim 19 wherein the relational grammar further comprises a plurality of rule statements for defining a second rule.

25. The computer program product according to claim 19 wherein the autonomic action comprises any one of a self-healing action, a self-protecting action, a self-configuring action or a self-optimizing action.

26. The computer program product according to claim 19 wherein the method further comprises:

- determining resource objects and constraints;
- solving the constraints to form a constraint solution for the resource objects; and
- using the constraint solution to identify the autonomic action to be performed.



27. A computer program product for creating autonomic computational linguistic grammar, the computer program product comprising:

a computer readable medium having computer readable program code therein for performing a method comprising:

creating a first lexical token statement, the statement identifying a first token representing a state or process in an autonomic environment;

creating a first category statement, the statement identifying a first category representing a derived state or process in an autonomic environment;

creating a plurality of autonomic rule statements defining an autonomic rule for deriving a first category, the statements comprising a relationship statement and an action statement; and

saving the first lexical token statement and the autonomic rule statements as a relational grammar.